



10CFR50.73

LG-16- 026
March 23, 2016

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Limerick Generating Station, Unit 1
Renewed Facility Operating License No. NPF-39
NRC Docket No. 50-352

Subject: LER 2016-001-00, Condition That Could Have Prevented Fulfillment of the
Reactor Enclosure Secondary Containment Integrity Safety Function

This Licensee Event Report (LER) addresses a condition that could have prevented fulfillment of the reactor enclosure secondary containment integrity safety function. Both airlock doors for one reactor enclosure airlock were briefly opened simultaneously due to a degraded door closing mechanism. The airlock design does not prevent simultaneous door opening. This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(v)(C).

There are no commitments contained in this letter.

If you have any questions, please contact Robert B. Dickinson at (610) 718-3400.

Respectfully,

Original signed by

Richard W. Libra
Vice President – Limerick Generating Station
Exelon Generation Company, LLC

cc: Administrator Region I, USNRC
USNRC Senior Resident Inspector, LGS

**LICENSEE EVENT REPORT (LER)**(See Page 2 for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

Limerick Generating Station, Unit 1

2. DOCKET NUMBER

05000352

3. PAGE

1 OF 4

4. TITLE

Inoperable Reactor Enclosure Secondary Containment Integrity Due to Open Airlock

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	25	2016	2016	001	00	03	23	2016		05000
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
1			<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(3)(i)		<input type="checkbox"/> 50.73(a)(2)(i)(C)		<input type="checkbox"/> 50.73(a)(2)(vii)	
			<input type="checkbox"/> 20.2201(d)		<input type="checkbox"/> 20.2203(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2203(a)(1)		<input type="checkbox"/> 20.2203(a)(4)		<input type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(2)(i)		<input type="checkbox"/> 50.36(c)(1)(i)(A)		<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
10. POWER LEVEL 100			<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 50.36(c)(1)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
			<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.36(c)(2)		<input type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.46(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(v)		<input type="checkbox"/> 50.73(a)(2)(i)(A)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> OTHER	
			<input type="checkbox"/> 20.2203(a)(2)(vi)		<input type="checkbox"/> 50.73(a)(2)(i)(B)		<input type="checkbox"/> 50.73(a)(2)(v)(D)		Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Robert B. Dickinson, Manager – Regulatory Assurance

TELEPHONE NUMBER (Include Area Code)

610-718-3400

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	NH	DR	W302	Y					

14. SUPPLEMENTAL REPORT EXPECTED☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

Unit 1 reactor enclosure secondary containment integrity was briefly declared inoperable when both doors on a reactor enclosure 201' elevation pipe tunnel airlock were simultaneously opened. The cause of the event was a degraded closing mechanism on the airlock inboard door. The airlock doors were closed to restore reactor enclosure secondary containment integrity. The degraded inboard door closing mechanism was repaired.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
		2016	- 001	- 00	
Limerick Generating Station, Unit 1	05000352				2 OF 4

NARRATIVE**Unit Conditions Prior to the Event**

Unit 1 was in Operational Condition (OPCON) 1 (Power Operation) at 100 percent power. There were no structures, systems or components out of service that contributed to this event.

Description of the Event

On Monday, January 25, 2016, Limerick Unit 1 was operating at 100 percent power with maintenance ongoing in the residual heat removal service water (RHRSW) / emergency service water (ESW) pipe tunnel. At approximately 1819 hours, the main control room supervisor (CRS) was notified that the local airlock open door alarm (EIS:ALM) was activated when a worker in the pipe tunnel opened the airlock outboard (pipe tunnel side) door (EIS:DR). The alarm indicated that both air lock doors were briefly opened for one reactor enclosure airlock. The reactor enclosure low pressure alarm setpoint is 0.20 inches of vacuum water gauge (WG) and the reactor enclosure low pressure alarm did not actuate during the event. The airlock was open for less than 10 seconds; therefore, the main control room airlock open alarm did not actuate. The reactor enclosure secondary containment integrity (EIS:NH) was declared inoperable for the period when both doors were open.

An investigation determined that a worker using the airlock properly verified that the door open blue light indication was not lit and then opened the outboard airlock door which activated the local airlock open alarm. The most likely cause of the alarm was a degraded inboard door closing mechanism that resulted in the inboard door opening far enough to activate the alarm when the outboard door was opened. The worker immediately reclosed the open outboard door when the local alarm actuated and the breach of secondary containment was terminated. The airlock was open for a period of less than 10 seconds. The worker notified Operations shift management of the containment breach.

TS 3.6.5.1.1 Reactor Enclosure Secondary Containment Integrity surveillance requirement 4.6.5.1.1.a requires verification that reactor enclosure pressure is greater than or equal to 0.25 inches of vacuum water gauge on a 24-hour frequency. The TS surveillance requirement 4.6.5.1.1.b.2 requires at least one door in each access to the reactor enclosure be verified closed on a 31-day frequency. TS 3.6.5.1.1 is applicable in operational conditions (OPCON) 1, 2, and 3.

This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(v)(C) for a condition that could have prevented the fulfillment of the safety function of structures or systems needed to control the release of radioactive material.

NEI 99-02 (Revision 7), Regulatory Assessment Performance Indicator Guideline, section 2.2 Mitigating Systems Cornerstone, Safety System Functional Failures, Clarifying Notes, states the following:

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Limerick Generating Station, Unit 1	05000352	YEAR	SEQUENTIAL NUMBER	REV NO.	3 OF 4
		2016	- 001	- 00	

NARRATIVE

Engineering analyses: events in which the licensee declared a system inoperable but an engineering analysis later determined that the system was capable of performing its safety function are not counted, even if the system was removed from service to perform the analysis.

This event will not be reported in the NRC performance indicator (PI) for safety system functional failures (SSFF) since an engineering analysis (technical evaluation) was performed which determined that the system was capable of performing its safety function during events when the airlock was open for less than 10 seconds. The post-LOCA dose calculation does not credit reactor enclosure secondary containment integrity for mitigation of on-site and off-site doses for the first 15.5 minutes of the event. Therefore, this event is bounded by the existing dose calculation.

Analysis of the Event

There was no actual safety consequence associated with this event. The potential safety consequences of this event were minimal. Both doors on the airlock were open simultaneously for less than 10 seconds.

To prevent a breach of secondary containment each reactor enclosure airlock is equipped with door open indicating lights that are used to locally verify the door status. If both doors are opened simultaneously a local alarm is actuated. If both doors remain open for greater than 10 seconds, an alarm is actuated in the main control room and operators are dispatched to verify that the airlock doors are closed.

UFSAR 6.2.3.2.1 describes the secondary containment design. The reactor enclosure secondary containment (Zones I and II) is designed to limit the leakage to 200% of their zone free volume per day, and the refueling area secondary containment (Zone III) is designed to limit the leakage to 50% of its zone free volume per day. These leakage rates are based on a negative interior pressure of 0.25 inches wg, while operating the standby gas treatment system (SGTS). Following a LOCA the affected zone is maintained at this negative pressure by operation of the SGTS.

Cause of the Event

The cause of the event was a degraded closing mechanism on the airlock inboard door. This event was not prevented by the design of the reactor enclosure airlocks since there is no mechanical interlock and the door open indicating light does not prevent simultaneous opening of both airlock doors.

Corrective Action Completed

The airlock doors were closed to restore reactor enclosure secondary containment integrity.

The degraded inboard door closing mechanism was adjusted.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Limerick Generating Station, Unit 1	05000352	YEAR	SEQUENTIAL NUMBER	REV NO.	4 OF 4
		2016	- 001	- 00	

NARRATIVE

Previous Similar Occurrences

Unit 2 LER 2015-006, Unit 2 LER 2014-007, Unit 2 LER 2014-004, Unit 2 LER 2014-003, Unit 1 LER 2014-003, Unit 2 LER 2014-002, Unit 2 LER 2014-001, Unit 1 LER 2014-002, Unit 1 LER 2014-001, and Unit 2 LER 2013-003 were submitted due to reactor enclosure airlock breaches allowed by the airlock design. Unit 2 LER 2013-002 was submitted due to a reactor enclosure airlock breach caused by a non-functional airlock door open indicating light not providing the correct door status. Unit 2 LER 2014-006 was submitted due to a reactor enclosure airlock breach caused by a door improperly latched closed.